

# Window into world's future oceans unveiled

February 18 2012

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An international team from the Nippon Foundation-University of British Columbia Nereus program has unveiled the first global model of life in the world's oceans, allowing scientists and policymakers to predict – and show through 3D visualizations – the state of life in the oceans of the future.

Combining scientific data from three major factors impacting our oceans – climate change, human activity (including fisheries and river run-off) and food web dynamics (fish eating fish), the Nereus model shows life under the sea from 1960 to 2060. Based on current policies, the model shows a strong decline in the biomass of large fish, while some small fish may actually be increasing.

"Our preliminary results show a global fish biomass of two billion tonnes, confirming earlier estimates taken from regional modeling," says UBC Fisheries Prof. Villy Christensen, who is presenting the research today at the Annual Meeting of the American Association for the Advancement of Science (AAAS) in Vancouver, Canada.

"This is the first comprehensive attempt to model life in our global oceans, and will require refining, but we can now show the future impact of choices we are making today, and answer the question: what must we do now to leave healthy oceans and fish to future generations?"

Christensen's academic symposium, titled Predicting the Future Ocean: The Nereus Program is on Saturday, Feb 18.

The Nereus model was developed by an international team of scientists in the Nereus – Predicting the Future Ocean program, a joint initiative between the Nippon Foundation and UBC. It is capable of analyzing data from four linked global models – Earth System, Ocean Life, Biodiversity Envelope, and Fisheries Management and Governance – to generate 3D scenarios based on different fisheries management choices and policies.

The Nereus model not only provides a first global view of life in our oceans, but also a predictive view of the future impacts of choices we are making now. The model includes a tool called "The Oracle," where the public can ask questions and the resulting answers illuminate the science lying behind the choices. For example, asking "How will fishing efforts impact future fish stocks?" leads to two scenarios. In one scenario, fishing efforts increase over time and result in dramatic declines in future biomass of large [fish](#). In a second scenario, fishing efforts are gradually reduced, resulting in a slow, gradual recovery.

During today's academic symposium, Christensen will announce formal partnerships between the Nippon Foundation-UBC Nereus – Predicting the Future Ocean program and five renowned institutions: Duke University, Princeton University, University of Stockholm, Cambridge University, and the United Nations Environment Program's World Conservation Monitoring Centre (UNEP-WCMC). Researchers from these institutions also joined Christensen in sharing their perspectives on the future of the world's oceans.

"What makes this partnership so exciting is the breadth and depth of expertise that it focuses on the oceans and our relationship to it," says Prof. Jorge L. Sarmiento, Director of the Program in Atmospheric and Oceanic Sciences at Princeton University, who also presented at AAAS today.

"We now have many of the world's best fisheries, climate, conservation,

and social scientists working together, and it is only through this kind of interdisciplinary effort that we can begin to understand what humanity will need to do to save our oceans, the seafood we get from it, and the human communities that rely on it," says Sarmiento.

"The Nippon Foundation is pleased to see the first results of this innovative international collaboration," says Mr. Yohei Sasakawa, Chair of The Nippon Foundation. "We hope this unique network of marine science including both social and physical science will change the mindset of global community for the [future ocean](#)."

Provided by University of British Columbia

Citation: Window into world's future oceans unveiled (2012, February 18) retrieved 1 May 2024 from <https://phys.org/news/2012-02-window-world-future-oceans-unveiled.html>

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